

Appl. No. 10/803,454
Amdt. sent January 30, 2007
Reply to Office Action of October 30, 2006

PATENT

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 2. This sheet, which includes Fig. 2 replaces the original sheet including Fig. 2.

Please add markings to illustrate the thickness dimension "t" of the optical disc 1.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Claims 1-10 are pending in the application. Claims 1, 4, and 6 have been amended. Support for the claims can be found in the specification as originally filed. No new matter has been introduced by virtue of these amendments.

A drawing objection was raised as to the thickness of the optical disk. Fig. 2 has been amended accordingly. No new matter has been added.

Claims 1, 3, 6, and 8-10 were rejected under 35 U.S.C. §102(e) as being anticipated by Shumura et al. (U.S. Patent No. 6,738,330). These claim rejections are overcome as follows.

Embodiments in accordance with the present invention relate to setting different recording settings for various types of optical discs. The optical disc device of the present invention includes a pickup 3 with a temperature sensor 31 configured to detect the ambient temperature of the interior of the pickup 3. *See, e.g., Figure 2 and paragraph [0027] of the present specification.*

Different laser power levels are used for writing data to optical discs of different materials. Figure 5 of the present specification shows the recording speed (write speed) at which data is capable of being recorded in the respective temperature regions for each type of optical disc. The optimum data recording speed for each optical disc can be stored in a table such as the table shown in Figure 6. In accordance with an embodiment of the present invention, the laser power is limited based on the value of the ambient temperature of pickup 3 (i.e., the higher the laser power, the faster the write speed and the higher the ambient temperature). The optical disc device sets the optimal laser power (power limit value) with respect to the optimum recording speed in accordance with the ambient temperature and determined data recording properties relating to the type of optical disc. *See Figures 5-6 and paragraphs [0035], [0037]-[0038], and [0042] of the present specification.*

Accordingly, independent claim 1 has been amended to recite the features of:

(1) a temperature sensor configured to detect temperature of an interior of the pickup of the optical disc device; and

(2) a system controller configured to determine data recording properties of the optical disc, to control the drive circuit in accordance with the temperature detected by the

temperature sensor, and to control the rotational speed of the optical disc based on the detected temperature and the determined data recording properties of the optical disc. Independent claim 6 recites similar features as that of independent claim 1.

The Examiner has cited the Shumura reference as disclosing a temperature sensor configured to detect temperature of an interior of the optical disc device (see column 4, lines 17-22 and column 6, lines 49-52 of Shumura). Applicants respectfully submit that the temperature sensor of Shumura does not detect the temperature of an interior of the optical pickup. Referring to column 4, lines 16-22 of Shumura, "a temperature sensor 14 is constituted by a temperature detection semiconductor such as a thermistor or a diode and, detects a temperature of optical reading part (not shown in the drawing) constituted by a laser diode 16 and a photodetector 18, particularly a temperature in the vicinity of the laser diode 16" (Emphasis added).

Here, while the Shumura temperature sensor 14 detects the temperature of the vicinity of laser diode 16, the temperature sensor 14 does not specifically detect the temperature in an interior of the optical pickup (i.e., in an interior of the laser diode 16). By contrast, Fig. 2 of the instant specification clearly shows the temperature sensor 31 disposed in an interior of pickup 3, as recited in the pending claims.

Furthermore, the temperature sensor of the Shumura reference is used for a different purpose than in the recited claims. In the Shumura reference, a controller takes the temperature detected value from the temperature detector and judges whether this temperature falls within an acceptable start temperature range. If the temperature detected exceeds the range, the controller automatically stops the recording operation (see column 6, lines 48-53 and column 7, lines 20-26 of Shumura).

On the other hand, the pending claims recite using the temperature sensor to maintain a desired recording speed depending on the type of optical disc (comprising a particular material with particular recording properties) that is used in the recording process. The controller of the claimed invention controls the rotational speed of the optical disc based on the detected temperature from the temperature sensor and the determined data recording properties of the optical disc (which may be stored in a pre-compiled table). The controller of the Shumura reference does not perform the above feature.

Based upon the failure of the Shumura reference to disclose each of the elements of the pending claims, it is respectfully asserted that claims 1, 3, 6, and 8-10 are patentable. The Section 102 rejection of the claims is believed to be overcome.

Claims 2, 5, and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Shumura et al. as applied to claims 1 and 6 and further in view of Kondo (U.S. Patent No. 5,561,664). These claim rejections are overcome as follows.

For similar reasons stated above, the Shumura reference does not teach or suggest:

(1) a temperature sensor configured to detect temperature of an interior of the pickup of the optical disc device; and

(2) a system controller configured to determine data recording properties of the optical disc, to control the drive circuit in accordance with the temperature detected by the temperature sensor, and to control the rotational speed of the optical disc based on the detected temperature and the determined data recording properties of the optical disc.

The Kondo reference fails to overcome the deficiencies of the Shumura reference. For example, the Kondo reference merely teaches that a system controller judges the type of disk in accordance with identification data added to TOC (Table of Contents) data. The system controller further outputs a control command to a tracking servo circuit and a spindle control circuit to access a UTOC (User Table of Contents) area and reproduces the UTOC data to be stored in a memory circuit (see column 6, line 64 to column 7, line 3 of Kondo). Here, while the system controller determines the type of disk being used, the Kondo reference does not teach or suggest that the system controller controls the rotational speed of the disk based on a detected temperature from a temperature sensor and determined data recording properties of the optical disc (which may be stored in a pre-compiled table).

Based upon the failure of the Shumura reference and the Kondo reference to teach or suggest each of the elements of the pending claims, it is respectfully asserted that claims 2, 5, and 7 are patentable. The Section 103 rejection of the claims is believed to be overcome.

Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Shumura et al. as applied to claim 1 and further in view of Sugita et al. (U.S. Patent No. 5,311,494).

The Examiner cited the Sugita reference as teaching that the dimension of the optical disc device in the thickness direction thereof is no more than 10mm (see column 21, line 68 and column 22, lines 1-2 of Sugita). However, the Shumura reference and the Sugita reference do not teach or suggest:

(1) a temperature sensor configured to detect temperature of an interior of the pickup of the optical disc device; and

(2) a system controller configured to determine data recording properties of the optical disc, to control the drive circuit in accordance with the temperature detected by the temperature sensor, and to control the rotational speed of the optical disc based on the detected temperature and the determined data recording properties of the optical disc.

Based upon the failure of the Shumura reference and the Sugita reference to teach or suggest each of the elements of the pending claims, it is respectfully asserted that claim 4 is patentable. The Section 103 rejection is believed to be overcome.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,


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Attachments
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